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## ALBUMOSE.

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THE presence of albumose in the urine has not received the attention it deserves; in the first place, because of its rarity, and in the second, because it seems difficult to associate the substance with any particular pathologic condition.

Nearly all writers on the chemistry of the urine either quote from some other work or give it some new name, till the subject is much bewildered and the chemical reactions are not well understood.

That this form of albumin is much oftener present than recognized, is, I am quite sure, owing to methods used. The routine method in general use, as is well known, is to add acetic acid to the urine and boil. If this gives no reaction it is taken as final. As the reactions given further on will show, this would fail to demonstrate the presence of albumose.

Bence Jones was the first to write on this subject. He found albumose in the urine in a case of molities ossium, and gave it the name of hydrated deutroxid of albumin. Kuhne also describes a case and gives it the name of hemialbumose. Da Costa describes a number of kinds of albumin, and to this one gives



the name albumose, which I have adopted. Roberts does not record any cases but says it is considered identical with the pro-peptone of Schmidt-Mulhein, and with the peptone of Meissner.

Peptone is very frequently found in the urine in cases of rheumatism or when the exudation is being absorbed in pleurisy or pneumonia, and should be carefully excluded.

The best test for peptone is the overlaying test with Fehling's solution, which gives the rose-colored zone; but if albumin is present the color is purple. Potassium ferrocyanid and acetic acid give a precipitate with albumose, but not with peptone.

All the writers on this subject have made the same mistake in stating that albumose is not precipitated by heat. If the urine is very acid, or if there has been any acid added, there will not be any precipitate on heating. Holland, in speaking of this, called it acid albumin.

In making a test, one should be sure the urine is not too acid; otherwise there will be no precipitate and this form of albumin will escape notice. There must be some change in the kidneys, as in all the cases I have seen there were hyaline casts.

My attention has only recently been called to this subject, and I have had no opportunity to examine the kidneys post-mortem. In my experience the substance has always been found in some diseased condition of the bones.

Whether there is any connection between the two conditions, I am not prepared to state at present.

The following are the tests for albumose. It is precipitated by alcohol, carbolic acid, nitric acid,

chromic acid, mercuric chlorid, tannic acid, picric acid, and metaphosphoric acid. If the urine be first acidulated with acetic acid, albumose will be precipitated by potassium ferrocyanid, potassio-mercuric iodid, sodium chlorid, magnesium sulphate. All these precipitates are dissolved by heat.

The best method for separating the proteids is given by Da Costa. Saturate the urine with ammonium sulphate, which will precipitate ovalbumin, serum-albumin, paraglobulin ; collect on a filter and test the filtrate for peptone. Dissolve the precipitate in distilled water and acetic acid, add ether, and if ovalbumin it will be coagulated. To the solution add magnesium sulphate and acetic acid, and paraglobulin and albumose are precipitated. Da Costa says magnesium sulphate will precipitate albumose, but unless acetic acid be added there will be no precipitate. If the precipitate will dissolve on heating, it is albumose ; if not, is paraglobulin.

The mistakes that are generally made are in confounding albumose with peptone, mucin, and paraglobulin, but with a little care and applying the well-known tests these can be excluded.

